

SWBAT: discover Ohm's Law

Jan 4-7:20 AM

Welcome!!!

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SECA Physics
Monday 29 March 2016

* Pick up:

- slip of paper (for later)
- yellow concept sheet from the shelf

Opening Questions:


What's the difference between R, A, C, I, and Ω ?


COULOMB

Centering

Sep 7-7:04 AM

Concept sheet: 6 rows total

Bike				
Concept	Meaning	Symbol	Units	Analogy
CHARGE	PROPERTY OF PROTONS & ELECTRONS THAT CAUSES ATTRACTION & REPULSION	q	COULOMBS C	
VOLTAGE =ELECTRIC POTENTIAL	POTENTIAL BASED ON POSITION IN AN ELECTRIC FIELD "PUSH"	V	VOLTS V $V = \frac{J}{C}$	-PERSON -PEDALING \Rightarrow THE PUSH
CURRENT	THE FLOW OF ELECTRIC CHARGE $= \frac{\text{CHARGE}}{\text{TIME}}$	I $I = \frac{q}{t}$	AMPERE A $1A = \frac{1C}{1s}$	-WHEEL CHAINS MOVING
RESISTANCE	OPPOSITION OF CURRENT "AGAINST THE FLOW"	R	OHMS Ω	BRAKES



Feb 23-7:34 AM

Current, Voltage, and Resistance: The Bicycle Analogy

If I were to pedal a bike while gently squeezing the hand brakes, what in that situation would be like
current?
voltage?
resistance?

I : WHEELS, CHAIN, MOVING
 V : PUSH
 R : BRAKES



Mar 7-7:33 AM

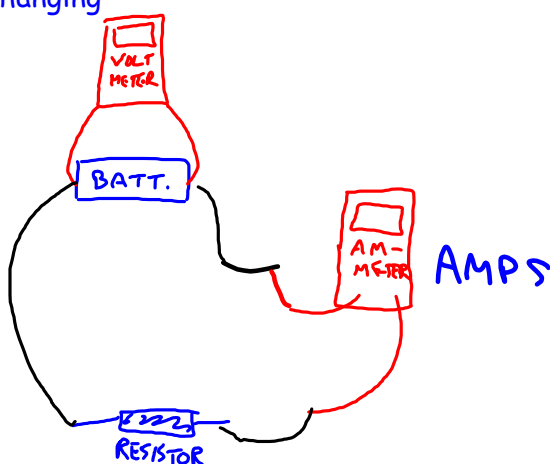
BASE LEVEL VOLTAGE Pedaling Effort	BASE LEVEL RESISTANCE Braking	BASE SPEED CURRENT Speed of bike?
Same	More	SLOWER
Same	Less	FASTER
More	Same	FASTER
Less	Same	SLOWER

Feb 23-7:43 AM

Gathering our experiment data!

- * Each group: 1 or 2 students do simulation lab
 - follow directions on the sheet
- * Each group: 2-3 students use the equipment
 - use the diagram below
 - choose a team name
 - let me know what you are changing

SAFETY
RULE:
IF BATTERY
GETS HOT,
STOP IT





Mar 8-7:43 AM

TEAM	TRIAL 1 or 2	V (V)	R (Ω)	I (A)	
SIX	1	1.45	10	0.12	1.2
	2	1.49	50	0.03	1.5
LAKERS	1	2.81	50 Ω	0.05	2.5
	2	6.2	50	0.11	5.5

Dec 13-8:21 AM

Concept sheet: 6 rows total

Concept	Meaning	Symbol	Units	Analogy
CHARGE	PROPERTY OF PROTONS & ELECTRONS THAT CAUSES ATTRACTION & REPULSION	q	COULOMBS C	
VOLTAGE = ELECTRIC POTENTIAL	POTENTIAL BASED ON POSITION IN AN ELECTRIC FIELD "PUSH"	V	VOLTS V $V = \frac{J}{C}$	PERSON PEDALING \Rightarrow THE PUSH
CURRENT	THE FLOW OF ELECTRIC CHARGE $= \frac{\text{CHARGE}}{\text{TIME}}$	I $I = \frac{q}{t}$	AMPERE A $1A = \frac{1C}{s}$	- WHEEL CHAINS MOVING
RESISTANCE	OPPOSITION OF CURRENT "AGAINST THE FLOW"	R	OHMS Ω	BRAKES
OHM'S LAW				

Feb 23-7:34 AM

Practice Ohm's Law!

$$\text{VOLTAGE} = \text{CURRENT} \times \text{RESISTANCE}$$

$$V = I \cdot R$$

Current = 2 A

Resistance = 4 ohms

What's voltage?

Mar 9-7:31 AM

Daily 3 Questions

- * Every day except test/project days
- * 3 Questions on the topics of the day
- * Main source of daily points
- * I am happy to give credit when I have no concerns about someone giving or getting help with the answers.

You can't get your points if you don't have your **NAME!!!**

Name	Period
1.	
2.	
3.	

Sep 9-7:32 AM

1. What are the ^{MEASURE} **units** for resistance?

2. Did our predictions for our circuits (generally) match our results?

3. What is the formula for Ohm's Law (in words or symbols) relating voltage, current, and resistance?

WHAT CALCULATION GOT AN ANSWER
LIKE YOUR V MEASUREMENT?

Feb 18-6:59 AM

Feb 27-10:28 AM